AT

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/635,357	08/06/2003	Hyun Rok Cha	U 014749-6	8874

140 7590 01/13/2005

LADAS & PARRY
26 WEST 61ST STREET
NEW YORK, NY 10023

EXAMINER	
MILLER, PATRICK L	
ART UNIT	PAPER NUMBER
2837	

DATE MAILED: 01/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/635,357	CHA, HYUN ROK	
	Examiner	Art Unit	
	Patrick Miller	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 October 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 5-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 5-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed October 25, 2004 have been fully considered but they are not persuasive.

   - Amended claims 1 and 8 recite, in the alternative, that the control unit uses either the zero crossing point or rotator information to predict a phase commutation. Here, Karwarth et al use the zero crossing point of the back-emf to shift-forward the firing angle, or commutation time for each phase. This is interpreted as predicting a phase commutation time because the system must know when the "normal" firing time is; that is to say, the system predicts when the "normal" firing time is, so that the system can shift forward the firing angle. Therefore, the amendment and arguments do not overcome the rejection. See 103(a) rejection below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata et al (6,479,956) in view of Karwarth et al (6,384,554).

   - With respect to claims 1 and 8, Kawabata et al disclose an method and apparatus to control a brushless dc motor equipped with a rotator, the apparatus comprising: a converting unit to convert AC power to polyphase power and supply the polyphase ac

power to the brushless motor (Fig. 1, #'s 2, 3, 4); a rotator operation detecting unit to detect operation information of the rotator (Fig. 1, #'s 8, 9).

- Kawabata et al do not disclose a control unit that predicts a phase commutation time of the polyphase ac power from either zero crossing point detection information from the polyphase ac power or from the detected operation information of the rotator; and controls an ignition time of an ignition phase current to be earlier than the phase commutation time.
- With respect to claims 1 and 8, Karwarth et al disclose an apparatus and method for controlling a brushless dc motor that has a control unit (Fig. 8, #1104, grouping of devices 83, 93, 85, 87, 88, and 94) that predicts a phase commutation time of the polyphase ac power based on the zero crossing points (col. 2, ll. 4-8; col. 6, ll. 32-33; zero crossing of the counter-emf) and controls an ignition time of an ignition phase current to be earlier than the phase commutation time (col. 1, lines 53-57). Specifically, the ignition current angle is preshifted to "fire" earlier than the commutation signal (col. 6, liens 25-33). The motivation to control the ignition phase current as described is to provide the advantage of providing the maximum current in a timely manner (col. 1, lines 55-57).
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to control the brushless dc motor of Kawabata et al so the ignition phase current "fires" before the phase commutation time, thereby providing the advantage of ensuring maximum current to the motor in a timely manner, as taught by Karwarth et al.

- With respect to claim 5, Karwarth et al disclose controlling an ignition time of an ignition phase current to be earlier than the phase commutation time, when implemented in the commutation pattern of Kawabata et al (Fig. 2, (a)), would make all of the phase currents conducted during a period between the ignition time of the ignition phase current and the phase commutation time.
- With respect to claim 6, Kawabata et al disclose the converting unit comprises: a converter to convert the ac power to dc power (Fig. 1, #2); an inverter to convert the dc power to polyphase ac power (Fig. 1, #4); and a capacitor connected between the converter and the inverter (Fig. 1, #3).
- With respect to claim 7, the control unit controls the ignition time of the ignition phase current supplied to the motor by generating an inverter control signal and outputting the control signal to the inverter (Fig. 1, #6 generates signal to #4, which would now be the preshifted ignition phase current, as taught by Karwarth et al).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Miller whose telephone number is 571-272-2070. The examiner can normally be reached on M-F, 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on 571-272-2800 ext 41. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick Miller
Examiner
Art Unit 2837

pm
January 10, 2005

DAVID MARTIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800